

1897

Report of the Commissioner of Sea and Shore Fisheries of the State of Maine for the year 1896

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Maine Department of Sea and Shore Fisheries

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REPORT
OF THE
COMMISSIONER
OF
SEA & SHORE FISHERIES
1896

STATE OF MAINE.

To His Excellency, Henry B. Cleaves, Governor of Maine:

The Commissioner of Sea and Shore Fisheries hereby most respectfully presents his biennial report for the years 1895 and 1896.

ORIN B. WHITTEN,

Commissioner of Sea and Shore Fisheries.

711,776

REPORT
OF THE
COMMISSIONER
OF
SEA ^{AND} SHORE FISHERIES
OF THE
STATE OF MAINE
FOR THE YEAR
1896

AUGUSTA
KENNEBEC JOURNAL PRINT
1897

REPORT.

In tracing the history of the fisheries on this coast, we find its origin long before Maine became a State. As early as 1613 Capt. John Smith, with a company of fishermen, took possession of Monhegan Island. In the early days of the Colonies, the fisheries were the leading business, and to-day it is one of the important industries of the State. The fisheries undoubtedly will continue to be a permanent industry so favorable for its continuance are the conditions—a long line of sea-coast, with its rivers, bays and estuaries, its hundreds of excellent harbors, the innumerable shoals which are the favorite feeding grounds for our food fishes, each contributing in assuring the permanency of the fisheries of Maine. In the natural advantages for the prosecution of the fisheries, Maine rivals all other states on the Atlantic coast.

A writer has said, "The fisheries of New England furnished our first articles of export and laid the foundation of our navigation and commerce." The fisheries from their inception have held an important and responsible position in our land. Fishermen, noted for their courage and patriotism, have done valiant deeds for their country both on land and sea. "We have seen through all the changes and chances of our Colonial submission, from its commencement to its termination, through the War of the Revolution, and in the negotiations for peace, in the convention that framed, and in the State Convention that considered, the Constitution of the United States, in the first Congress, and in the negotiations at the close of the war of 1812 that the fisheries occupied a prominent place, and were often the hinge on which turned questions of vast importance."

During the civil struggle, the fishermen of Maine were among the first to respond to their country's call. So important as the fisheries have been and are yet, they are burdened with danger, hardships, loss of life and property, and with all the perils attending

the pursuit of the fisheries, with the serious depression and ruinous losses, with their meager remuneration, still there are thousands of courageous men engaged in the fisheries, men on whom the country are dependent in time of trouble to man the battle ships of the seas. The fisheries are well known to be the best nursery for seamen.

The distance in a straight line along the ocean front is two hundred and fifty miles from Kittery Point to Quoddy Head, but, including the rivers and bays, Maine has twenty-one hundred and forty miles of sea coast. The fisheries, like all other business, have their changes, their seasons of adversity as well as of prosperity. On account of modern improvements, their management is subject to change from year to year. A quarter of a century ago the Bank cod fishery was the principal fishery business in the State. Then nearly every town on the coast was largely engaged in this business, having a large fleet of vessels and giving employment to the citizens of the town. At present this style of fishing is changed, there being less than ten vessels engaged in the Bank cod fishing in this State. Various causes can be attributed for the almost entire abandonment of this branch of the business; the withdrawal of the bounty by the repealing of the act in 1868; the enormous expense and uncertainty attending this branch of the fisheries, and a strong competition with the Canadian fisheries, made doubly so by the fostering care of their government over their fisheries whereby they appropriate \$160,000 annually to encourage the development of sea fisheries and building fishing vessels. These, with other unfortunate conditions, are some of the causes for the present demoralized condition of the Bank cod fisheries of Maine and New England. In these days of rapid transit and refrigerator cars, fresh fish are shipped to nearly every section of the country, thus largely interfering with the salt-fish trade.

Notwithstanding the decline in the Bank cod fisheries, other branches of the shore fisheries are being followed more extensively, and while the volume of the business may be less than ten years ago, yet the Maine fishermen who are dependent upon the products of the sea for their livelihood, are following a less hazardous business and receiving a fair remuneration for their labors.

Maine is largely interested in the hake, cod, haddock, pollock, herring, smelts, sword fish, clam, alewives and lobster fisheries.

The cod, hake and haddock fishing, which is termed the ground or deep sea fishing, is pursued in vessels from forty to one hundred

tons measurement, carrying an average crew of fourteen fishermen. Most of the fish caught in these vessels are preserved in ice and are sold in this condition to the various fresh fish markets where they are repacked in ice and distributed over the country.

There are licensed in the custom districts of this State five hundred and twelve fishing vessels, measuring 10,122 tons, being seventy-five more vessels under fishing licenses than at the last report. There are 14,690 persons connected with the fisheries.

York County has	19	vessels,	315	tons measurement.
Cumberland County has.....	100	"	3,170	" "
Sagadahoc County has.....	3	"	46	" "
Lincoln County has.....	41	"	1,212	" "
Knox County has.....	83	"	1,305	" "
Waldo County has	31	"	265	" "
Hancock County has.....	214	"	3,546	" "
Washington County has.....	21	"	263	" "
Total	512	"	10,122	" "

HERRING.

The herring fishery, in connection with the sardine industry, undoubtedly takes rank as first in importance of all the fisheries in the State. History tells us that they have been known as the poor man's fish, and are always with us in the spring, summer, fall and winter. This class of fish are found in nearly every sea port country, and it is evident that they are the most numerous of all the species of fish. Their power of reproduction is so enormous that even their enemies of the sea and land combined make no perceptible diminution of them. The number of roe to be found on the spawning grounds all along the coast of Maine, and especially on the beaches, is something beyond the calculation of man to estimate. The herring during the year 1896 have been unusually prolific and they have crowded in immense schools the little bays and inlets along the entire coast. The commercial importance of the herring fisheries no doubt exceeds all others. When we consider the various forms in which this fish appears upon the market, namely: sardine's size, medium, scaled, lengthwise, bloaters, split, round, pickled and frozen, the product in the aggregate amounts to more in money value than any other fishery on our coast.

The frozen herring business by artificial process, carried on principally at Boothbay Harbor, dates back only a few years. While frozen herring enter largely as a food product, yet they are exten-

sively used by the deep sea fishermen who purchase them for bait in the early part of the winter before Newfoundland herring arrive. This is practically a new feature in the herring business, and with proper protection it will become an important one, as it can readily supply all the bait that is necessary, if the artificial process can be enlarged and a market assured for its product. From statistics we learn that there were 21,250 barrels of salted herring valued at \$53,375.00 and 1,217,950 bushels of fresh herring valued at \$197,790.15 making a total of \$251,165.15.

SHAD.

The shad are caught in seines, drift-nets and weirs, and according to the U. S. Commissioner of Fish and Fisheries, it is believed that they attain maturity in three or four years. "A more numerous class of immature individuals feed about the bays and in the mouths of the rivers during the summer, later than the ascent of the main body of breeders. They are of smaller size, fatter and more numerous. The fishermen call them 'sea shad' and consider them quite distinct from the 'river shad' or 'spring shad,' but there is abundant reason to believe them merely the common shad at a particular stage of growth. They never ascend the rivers so far as the spawning shad, rarely showing themselves in any great numbers above the reach of brackish water." The shad are found principally in the Kennebec and Eastern rivers and there is a large revenue derived from this fishery. During the fishing season it gives employment to many people living in the towns on the rivers, while at other times they are engaged in various other occupations. It is estimated that on the Kennebec river there are 394 fishermen engaged in the shad fishery with weirs and drift-nets, with 181 boats, and the value of the weirs, nets and boats is \$24,085.00.

The shad fishery changes from year to year and various opinions are expressed as to the causes governing these changes. The season of 1896 has been an unusual one so far as regards the quantity caught, but the prices have been very low, so that the receipts have not been very satisfactory. Wishing to get an expression from the experienced shad fishermen concerning the shad fishery, I prepared a series of questions and submitted them to the fishermen on the Kennebec and eastern rivers, and have returns from twenty-seven of them. I presented the following questions:

1. Are you familiar with the mode of taking shad?
2. Are you a shad fisherman?
3. How long have you pursued the business?
4. During what months are the largest catches of shad?
5. Has your method of catching shad been by weirs, traps or gill nets?
6. What has been your catch per year?
7. Does the catch vary from year to year?
8. In your opinion what is the cause of years of plenty and years of scarcity?
9. In what part of the river are the spawning grounds?
10. Has saw-dust or other waste material accumulated on their spawning ground?
11. What effect does saw-dust have on the spawning grounds?
12. Where do you find a market for your shad?
13. Do you sell them fresh or salted?
14. How many shad caught in 1896?
15. Has the price varied much since 1880?
16. What percentage of fish taken are spawn fish?
17. What is the difference between summer and spring shad?
18. Has there been any improvement made in gear for shad fishing for the past fifteen years?
19. What kinds of fish are enemies to the shad?
20. What kinds of fish are taken in traps and weirs with the shad?
21. How many persons are engaged in the shad fishery?
22. How many weirs, traps and nets?
23. Amount of money invested in the shad fishery?

In answer to question 8. some replied, "Don't know;" others expressed the opinion that the condition of the weather and temperature of the water affects the fish. The schools may be large or small, and much depends on the condition of the water when they strike the river. If the current is strong on the ebb and the water foul and muddy, less fish enter the river than when the water is clear and flood tide strong. Answer to question 10 is, "Saw-dust may be found in large quantities in almost any part of the river." In answer to interrogatory 11, a practical shad fisherman of twelve years' experience says: "I should say it rendered them foul, and in decomposing throws off gases which under the same conditions

in a pond will kill fish, of course, though the effect in a large river is not so great, but then the effect must in a degree be the same.

"I think that the chemicals emptied into the Androscoggin above Brunswick from the pulp and woolen mills exert a very deleterious effect on the fisheries, it having been so strong at one time as to give the fish a very strong taste and rendered them unfit for use." I have the following answer to question 16: "They vary very much, in 1896 should say 45 or 50 per cent., in 1895, 15 to 25 per cent." The majority report from one-third to one-half. It is stated in answer to questions 21, 22 and 23, "Think there are one thousand persons engaged in the shad fishery, using from 100 to 152 weirs and traps, and that there is invested nearly \$40,000.00. The total amount received for shad during the season of 1896 was \$30,727.00.

CLAMS.

This industry is of much more importance than at first imagined. There is no place on the coast that fails to produce its quota of this shell fish, and it is a marvel when we consider the production, the money value and the number of persons who depend upon this branch of the fisheries, and this alone for their entire support. According to statistics we find the following, in connection with the clam fishery: Number of persons employed, 781; number of bushels of clams in shell, 282,961; value of clams in shell, \$110,-878.90; number of cases of clams packed, 40,674; value of clams packed in cases, \$119,379.00; number of barrels of clams for bait, 4,053; value of clams for bait, \$18,385.00.

MENHADEN.

Another year has gone by and has furnished one more object lesson,—the total absence on this coast of this species of fish, which has held a very important part in fish industries of the State. Large bodies of menhaden came north as far as Cape Cod, but for some reason beyond the knowledge of man they failed to put in an appearance on their natural feeding grounds, and the factories in Lincoln county which operated in the manufacture of fish oil and fish products, have been idle and silent with closed doors for the entire year of 1896.

This absence of the menhaden on this coast means a great loss to the State, and especially to the sea port towns of Lincoln county,

as the annexed table will conclusively demonstrate. The statistics gathered concerning the menhaden fishery for 1895 is as follows: Number of steam vessels employed, 6; value of vessels employed (steam,) \$90,000.00; number of men employed, 479; number of barrels of menhaden caught, 37,438; number gallons of oil produced, 149,576; number tons of scrap produced, 1,103; value of catch, \$41,340.00; the cost of factories, \$150,000.00.

The steam vessels operating in the menhaden fishery are owned in Rhode Island, but they were built in Maine and manned by Maine fishermen.

SMEELTS.

The smelts are found in large quantities in the bays and rivers, which they frequent for the purpose of feeding and of depositing their spawn. In some sections of the State waters they are principally caught with seines. Weirs, bag nets, fyke nets, and gill nets are extensively used. In winter when the rivers are frozen over, they are fished for through the ice by hook and line. This branch of the fisheries furnishes employment to many of the citizens, from which they receive their winter's support.

Found in the report of the U. S. Commissioner of Fish and Fisheries, in a descriptive account of the smelt fishery, is the following: "In the Damariscotta fishery the small houses were first built of heavy boards, then with wooden frames and walls of clapboards, and finally a few years ago other coverings gave place, generally to cloth. They are commonly five feet long and four feet wide, cost about five dollars complete with stove, and can be easily moved about on a hand sled. The hook fishing is pursued by people of many different callings who find a lack of employment in winter. Altogether there is no branch of the river fisheries that contributes so much to the comfort and well-being of the local population as this." There was a large amount of smelts caught during the season of 1896 and more persons engaged in the business than for many previous years, but the prices have ruled very low during the entire season and consequently the revenue is not as large as in some other years. The catch for the year 1896 was 1,326,000 pounds which was sold for \$71,704.00. The smelts are shipped principally to Boston and New York.

SALMON.

In former years when the rivers of Maine were undisturbed, they were the favorite spawning grounds for salmon, and they were found in abundance. At the present time they are found only (with the exception of a few straggling ones) in the Penobscot and St. Croix rivers. If the report of the salmon fishermen are authentic, we must believe that in these rivers they are becoming depleted, although it is said that the fishing season of 1896 on the Penobscot river was an improvement over 1895. I am not aware that any reliable solution has been rendered for the almost absolute absence of this valuable fish from nearly all the rivers in the State. The following annexed table will show the result of the salmon fishery with nets and weirs for the year 1896:

Number of persons employed, 192; number of weirs, 175; value of weirs, \$8,795.00; number of boats, 107; value of boats, \$2,727.00; amount of catch, 75,117 pounds; value of catch, \$12,288.52.

ALEWIFE.

The alewife fishery is carried on principally in the Damariscotta, Medomak and Saint George rivers. These fish frequent these rivers in immense shoals and seek the lakes and ponds above the tide waters in which to deposit their spawn. Alewives are used for bait for the ground or deep sea fishing, but they serve principally as a food fish. They are caught at the head of tide waters in dip nets. The towns of Nobleboro, New Castle and Warren have municipal authority over this fishery in their localities, and appoint fish committees to manage this fishery under the direction of the State law. There were 11,431 barrels of alewives caught in the State during 1896, from which product the sum of \$16,204.50 was realized.

SARDINES.

We learn from records that Eastport claims the honor of putting up the first hermetically sealed goods within the limits of the United States. The American sardine business originated in Eastport in 1875, and from a small beginning it has grown enormously until it has reached in the scale of business one of the most important fishing industries in the State. Small herring in countless numbers frequent the bays and rivers the entire length of our coast, making it possible for a still larger extension of this industry.

Certain unfortunate and unfavorable conditions entered into this business, especially during the last two years, making it less profitable than it otherwise would have been. The prices have ruled low, and with the interference of the labor strike and with a quantity of inferior goods on the market, all has had a tendency to depress the business. It is claimed that Maine has the natural monopoly of the business owing to the absence of the small fish suitable to make sardines on the coast south of the State boundary line. Nature has placed at our doors a mine of great wealth if wisely directed and properly improved. Many of the sardine packers assert that if only goods of the best quality should be placed on the market, the whole production would find a ready sale and at a good profit. Many plans have been discussed to bring this about. It is a matter of vital importance from a business standpoint. If a proper plan to accomplish this result can be devised, its effect will be felt throughout the entire State.

Many persons are suspicious and express the opinion that sardines of good quality cannot be manufactured from small herring, but there can be no reasonable doubt that if the same care is exercised in preparing the American sardine as is observed in manufacturing the foreign, they would be fully equal in every particular to the imported sardine. Eastport and Lubec are still the centres of this industry, and many of the people in these sections are dependent upon the sardine industry for a livelihood. Some are engaged in catching and transporting the fish, others are employed in various ways in the sardine factories. At one time during this season the factories were closed pending the settlement of the question of wages, and at that time it seemed that the volume of the pack would fall considerably below the pack of 1895; but according to statistics gathered, the pack will nearly equal the number of cases packed last season. The following table will give a statistical summarization of the sardine industry:

		Value of factories.	Help.	Pay for help.	Boats.	Value.	Bushels sardines.	Value of catch.	Cases packed.		
Number factories in Washington county	50	\$290,500	5,132	\$676,165	50	104	\$45,000	751,295	\$112,694	25	751,295
Number factories in Hancock County.	7	31,200	320	58,334	80	17	21,800	64,871	16,217	75	64,871
Number factories in Knox County	1	5,000	62	9,685	50	1	750	4,922	1,230	00	4,922
Number factories in Lincoln County....	3	27,000	252	16,188	27	1	2,000	16,732	4,257	00	19,499
	60	\$353,700	5,785	\$760,424	07	123	\$69,550	837,820	\$134,399	00	\$40,587

The factories are located as follows: Eastport, 20; Lubec, 15; Perry, 3; Pembroke, 2; Jonesport, 4; Milbridge, 2; Robbinston, 1; Moose River, 1; Buck Harbor, 2; Deer Isle, 2; Swan's Island, 1; Brooklin, 1; Mt. Desert, 2; Prospect Harbor, 1; Rockland, 1; Boothbay Harbor, 2; total, 60.

One factory at Deer Isle and the one at Mt. Desert have not been employed this season.

MACKEREL.

The mackerel fishing season of 1896 will be recorded in history as remarkable in many respects. The old time fishing grounds, where a very large percentage of the Maine mackerel fishing has been done, extending from the western boundary of the State to Mt. Desert, and some years further east and from ten to forty miles in width off shore, have been known for a century or more by American fishermen as the favorite breeding and spawning grounds for the mackerel. Strange to relate this fishing ground, which yielded 400,000 barrels of mackerel in 1885, has produced less than 1000 barrels during the season of 1896. Ten years ago the mackerel fishing was one of the leading fishing interests in the State, but on account of ruinous losses and absence of fish, the business continued to decrease year by year. Vessels have been sold or placed in other business, and to-day out of the 100 sail of staunch sea-going vessels that formerly followed the mackerel fishery, only fourteen were engaged in this business during the season of 1896.

Mackerel are a migratory fish and it is beyond man's power to foretell their movements for the coming season. This season the great body of mackerel inhabited the water near the Georges Banks, and our fishermen by their persistent efforts in that shoal, rough water and its strong tides, have got good trips of mackerel and good prices. It will be remembered that with the absence of the mackerel on this shore, the few mackerel fishermen that are left have made the best season's work they have made for many years. The New England catch of mackerel, as gathered from reliable statistics, in 1895 was 19,247 barrels salt mackerel, and 17,753 fresh; in 1896, 70,000 barrels of salt mackerel and 30,000 barrels fresh, showing an increase of 63,000 barrels. Four of the Maine mackerel fishing vessels have stocked nearly \$60,000 during the present season. The annexed table will show the number of vessels employed in the mackerel fishery, their tonnage and value, also the

number of men employed and the value of the mackerel catch for the year 1896:

Number of vessels employed, 14; number of men employed, 235; value of vessels, \$44,200.00; tonnage of vessels, 1,125; value of seines, boats and gear, \$25,200.00; vessels from Portland, 10; vessels from Boothbay Harbor, 3; vessels from North Haven, 1; value of catch, \$84,566.88.

SWORD FISH.

This species of fish is unlike all others which frequent our waters. Even those who have made scientific researches have been unable to contribute any considerable knowledge regarding the habits of the sword fish. We are told that they are abundant in the Mediterranean, even as far east as Constantinople. We know that they appear in the Atlantic waters early in spring, and while a few straggling ones can be found in October, yet it is a rule rather than exception that they, like the mackerel and menhaden, disappear at the first chilly blasts of September.

The sword fish feed on mackerel, menhaden and squid which are so abundant in the summer months, and undoubtedly it is in pursuit of this food that they come into our waters. It is an old saying with the fishermen, "When you see a sword fish you may know that there are mackerel near." There is a large fleet engaged in this fishing, yet the fishermen agree that there is no appreciable decrease of the fish. This may be accounted for from the fact that spawning sword fish do not frequent the Atlantic waters. The sword fish is powerful with an average weight of 250 pounds, and being so large an aquatic animal can have but few enemies which he cannot easily conquer. The sharks are probably its worst enemies.

The sword fish business dates but a few years back, and at its commencement it was pursued in small sloops and other small crafts. At first as an article of food it was pickled or salted and cut up into strips and placed in layers in barrels after the manner of packing salt pork. At present this industry is carried on in vessels from 60 to 80 tons measurement, manned with crews of eight men. The demand for sword fish is so extensive that they are readily sold as fast as they arrive, and packed in ice and shipped over the country. The report of this branch of the fisheries has

never been submitted, and as it is an important and growing industry, it may be of some interest to those not familiar with it to have some knowledge, not only of the fish, but also the manner of capturing them. For a full and complete descriptive account of the manner of catching the sword fish, I am pleased to quote the report of the United States Commissioner on "Propagation and Enquiry of Food Fishes."

"The sword fish never comes to the surface except in moderate, smooth weather. A vessel cruising in search of them proceeds to the fishing grounds and cruises hither and thither wherever the abundance of small fish indicates that they ought to be found. A man is stationed at the mast-head where with the keen eye which practice has given him he can easily descry the tell-tale dorsal fins at a distance of two or three miles. When a fish has once been sighted, the watch "sings out" and the vessel is steered directly towards it. The skipper takes his place in the pulpit, which is fastened at the end of the bowsprit, holding the pole in both hands by the small end and directing the man at the wheel by voice and gesture how to steer. There is no difficulty in approaching the fish with a large vessel, while they will not suffer a small boat to come near them. The vessel plows and swashes through the water, plunging its bowsprits into the waves without exciting their fears, although there would be no difficulty in bringing the end of the bowsprit directly over the fish, a skillful harpooner never waits for this. When the fish is from six to ten feet in front of the vessel it is struck. The harpoon is never thrown, the pole being too long. The strong arm of the harpooner punches the dart into the back of the fish right at the side of the high dorsal fin and the pole is withdrawn and fastened again to its place. When the dart has been fastened to the fish the line is allowed to run out as far as the fish will carry it, and is then fastened in a small boat containing two men, who pull in upon the line until the fish is brought in alongside, it is then killed with a whale lance or a whale spear which is stuck into the gills. The fish having been killed, it is lifted upon deck by a purchase tackle of two double blocks rigged in the shrouds."

The fish are cleaned and prepared and placed whole in the hold of the vessel and solidly packed in ice, where they remain until a full trip is taken or the vessel arrives in port. Each vessel carries about fifteen tons of ice. Fifty sword fish is considered a good trip.

The following table will show the number of vessels and their tonnage and value engaged in the sword fishery, also the number of men employed and the number of fish caught, and weight, and their proceeds for the year 1896 :

Number of vessels engaged in sword fishing, 32 ; amount of tonnage, 1,563.33 ; value of vessels, \$51,100.00 ; number of men employed, 256 ; number of sword fish caught, 5,203 ; number of pounds sword fish 1,300,750 ; value of sword fish, \$39,524.63 ; 26 vessels hail from Portland District ; 2 vessels hail from Friendship ; 2 vessels hail from Cape Porpoise ; 1 vessel hails from Tremont ; 1 vessel hails from Boothbay Harbor.

SALT FISH.

The salted fish comprise the cod, haddock, hake and pollock. The business for curing cod fish for export purposes is growing less every year. This business at one time was considered the most prosperous of all the fisheries. So much importance was placed upon this industry that our government saw fit for a time to encourage, protect and foster it by paying an annual bounty. Subsequently the bounty was withdrawn and through ill legislation and other unfortunate conditions this industry has been so heavily burdened that the catching of fish for export has almost ceased to be a part of the fisheries of Maine—a fleet of three vessels at Boothbay Harbor and three at Bucksport being the only vessels that have been engaged in the Bank cod fishery the present season in this State. The pollock fishery is carried on principally in the waters of Hancock and Washington counties. These fish are slack salted and dried, and for them there is a large demand and they find a ready sale in our home markets. The amount of fish cured for export and local consumption in 1896 was 9,196,320 pounds, valued at \$202,530.00.

FRESH FISH.

The fresh fish business is a large and extensive industry and is increasing every year. The demand for fresh fish is enormous, and at times, even with the large fleet of vessels engaged in the business, it is difficult to supply the demand. Portland is the largest distributing market in the State. By carefully gathering the statistics from day to day from the different arrivals of fish, we find that during the year from December 1, 1895, to December 1, 1896,

there have been received in Portland market 3,812,269 pounds of cod fish, 5,158,416 pounds haddock, 2,212,223 pounds hake, 684,942 pounds pollock, 4,990,161 pounds cusk, 518,928 pounds halibut, and 443,461 pounds fresh mackerel; total, 17,820,400 pounds, amounting in money value to the fishermen to \$379,476.71. The total amount of this industry in the State for the year 1896 is 24,406,330 pounds of fish valued at \$504,294.02.

LOBSTERS.

There is much information that can be obtained in regard to the lobster and its habits which would be valuable in aiding legislation tending towards the protection and increase of this valuable crustacean. At every session of the legislature the lobster has been a subject for consideration. Laws have been enacted, amended and repealed, all looking for the better protection of the lobster, but in most cases they have failed to produce the desired result. Prof. Herrick says, "Before we can deal intelligently with the problem of protecting an animal from destruction, or of increasing its numbers, it is of the first importance that we become thoroughly acquainted with the habits of the animal in question, with its distribution, with the sources of its food at all seasons, with its methods of breeding, with the development of the young, and their habits from the time they leave the egg until they are themselves able to propagate their kind."

The lobsters feed on fish, clams, mussels, and other animal food. They are not migratory in their habits, but live chiefly on or near the sea coast. They do not journey very far from their original habitations. During the cold weather they travel from shoal into deep water, and at the approach of spring they return to the shoal water, where the egg-bearing lobsters reproduce their young. This shows that they have a keen sense of feeling, for in their journeys off and on from the shallow water near the shore to the deeper water farther out, they are guided in their travels by the temperature of the water. Those not interested in the lobster fishery have but a slight conception of its importance. It is one of the great industries of the State and should be guarded and fostered accordingly. This State with her rocky shores, her bay and inlets, seems to be especially favored by nature as a breeding ground for the lobster and is adapted to this industry as no other state on the

coast is or can be. Maine produces more lobsters than all the other states combined, consequently there is invested in this fishery many thousand dollars and it gives employment to many thousands of the citizens of the State. The increase of population has largely and naturally enlarged the demand for the lobster, and in view of the increasing importance of the lobster fishery as a means of livelihood and a source of food supply, there is a necessity of throwing around and about it the strong arm of the law of its protection.

We learn from scientists who have made the lobster question their study, that the lobster does not spawn oftener than once in two years. According to a table prepared showing the state of growth, the estimated length of lobsters during the first thirty moults is as follows: A lobster two inches in length has moulted 14 times; a lobster 5 inches in length from 20 to 21 times; from 10 to 11 inches long, 25 to 26 times; and a 19 inch lobster, 30 times. A lobster measuring 10 to 12 inches in length is about 5 years old. The average number of eggs carried by a 11 inch lobster is 15,410.

The pernicious destruction of the eggs of the lobster is a terrible waste of life, and there is no surer or more speedy way to deplete the lobster fishery than by destroying the spawns and catching the small lobsters. There was a time when the lobster fishermen generally disregarded the lobster law—"living only for the present; taking no heed for the future"—but destroying day after day the business from which they were gaining their livelihood. I am pleased to report that there has been a considerable change among the lobster fishermen, and while there are some that continue to violate the law, yet the great majority have realized the mistake they have made and at the present are faithfully observing the law, which means for them an increase of lobsters and a permanent and paying industry. Wherever the law is observed there can be shown by statistics that the lobsters have increased. Warden Lynam, having under his jurisdiction Prospect Harbor, Bar Harbor and vicinity, says under date of October 28th: "My report for the month of September, 1895, shows a catch of 19,891 lobsters, employing sixty-one men and fifty-eight boats. For the month of September, 1896, I report a catch of 36,220 lobsters, with 68 fishermen and 55 boats." Warden Sprague of Swan's Island says: "I have been comparing my last year lobster reports with the report of 1896, and I find a gain in the lobster fishery of over one-half."

Statistics show that at the commencement of the year there were 172,865 lobster pots in operation, but a large percentage have been lost, occasioned by the heavy gales and storms to which they have been exposed and it is safe to say that with the pots that have been lost, with the new ones to replace them, that the number of pots used for the season will exceed in number 302,513 with a cost not less than \$378,141. One fisherman at Wood Island reports that he set 70 pots and after a severe storm he found only one. A fisherman at Cape Porpoise lost an entire string of 100 pots. This is but a fair illustration of the losses of the lobster fishermen all along the coast.

At the request of the United States Commissioner of Fish and Fisheries, John J. Brice, I granted Mr. G. T. Locke of the station of the United States Commission at Gloucester, Massachusetts, permission to take breeding lobsters at Kittery for propagation and scientific purposes. October 16, 1896, I received a letter from C. G. Corliss, superintendent in charge of station, in which he says: "that the records of the station show that 374 egg bearing lobsters were collected at Kittery Point and vicinity yielding 5,489,000 eggs. Three hundred and fifty-two thousand lobster fry were liberated at Kittery Point and 154,000 at York Harbor. There was also liberated at New Castle (virtually Maine waters) 150,000 lobster fry." Under date of June 27th I received a communication from John J. Brice, United States Commissioner of Fish and Fisheries, requesting me to issue necessary authority to Lieut. Franklin Swift, United States Navy, commanding the United States Fish Commissioner's steamer "Fish Hawk" to hold egg-bearing lobsters in live cars pending the stripping of the eggs. The request was granted. I have no advice of the number of lobsters taken, but do have the knowledge that all the lobster fry were deposited in Maine waters.

The United States Government has given much attention to the artificial propagation of the lobster. At the station at Wood's Holl there are facilities for the incubation of 95,000,000 lobster eggs and 5,500,000 of cod eggs. At one time in June I had the pleasure of visiting the hatchery for the purpose of gathering all the information possible during my brief stay there, concerning the method and result of artificial hatching of different species of fish. I was very hospitably entertained by Mr. John Maxwell, who has

charge of the station and has been connected with the fish commission for a number of years. The artificial hatching of the lobster eggs is a success, from the fact that 95 per cent of them mature, but when the fry are deposited in the deep water before they are able to protect themselves, this question naturally arises: how many of them, if any, escape becoming food for other fishes?

The artificial hatching of lobsters is attended with large expense, and it may be at the present time with results not as satisfactory as desired. Maine is favored with a sea coast indented with little bays and inlets, many of which at a small outlay could be made desirable for the artificial breeding of the lobster. As the lobster industry is of vital importance to the State, and legislation is asked, for the propagation and protection of the lobster, and as artificial breeding of the lobster can be carried on in a simple, economical manner, I would respectfully suggest that the question of lobster culture is worthy of consideration. I have endeavored to ascertain as nearly as possible, thinking it may be of practical use for future reference, what percentage of all the lobsters are females. I have not confined myself in this investigation to any particular locality, but have had experienced fishermen from Harpswell, New Harbor, Isle au Haut, Matinicus and Oceanville gather the desired information for me. Mr. James Paul, Harpswell, states that in the month of September he caught 203 lobsters and of that number 54 were females. Mr. Lyman Hanna, of New Harbor, caught 455 lobsters, 178 were females; Mr. E. Poland in the month of October caught 421 lobsters and 168 of them were females. Mr. E. Hanna in same month caught 391 and 148 were females. Mr. W. G. Ames, of Matinicus, in the month of September caught 1200 lobsters and 700 were females. Mr. Preston Ames and F. R. Dyer, of Matinicus, caught in September 2,880 lobsters and they say that about one-half were females. Mr. Henry Ring, of Matinicus, says that about 27 per cent are females. Mr. F. M. Trundy, of Oceanville, says under date of October 3rd, "I have kept an account of my catch since September 6th and have caught 581 market lobsters and 285 of them were females.

It is estimated that about 5 per cent. of the female lobsters show by the development of their reproductive organs indications of spawning at the time of being caught.

The following detailed statement will show the number of lobsters taken and the value of the product, the number of men employed

and the capital invested in the lobster fishery for the year 1896: Number of men employed, 2,708; number of lobster cars, 2,431; value of lobster cars, \$21,532.75; number of lobster boats, 3,353; value of lobster boats, \$219,183.00; number of lobsters taken, 7,825,575; value of lobsters taken \$790,276.70; number of pots, \$172,865; value of pots, \$194,432.50; total amount of catch and invested, \$1,225,424.95; estimated number of lobster pots used during the year, 302,513.

CODIFICATION OF FISH LAWS.

The legislature for the past twenty years has been occupied a long time in each session in the interest of the fisheries, and with all this legislation it has left the statutes in such a conflicting condition that it is difficult for lawyers or judges to correctly interpret the true intent and meaning of the laws in reference to sea and shore fisheries. The last legislature authorized the Governor to appoint a committee to investigate, revise and simplify all laws relating to the sea and shore fisheries, and the commission is at work on this very important undertaking and will report to the legislature early in the session.

APPROPRIATION.

It is recommended that a liberal appropriation be made for the purpose of collecting statistical information. While the appropriation for the last season seemed adequate for the time, yet the additional responsibility placed upon the Commissioner of Sea and Shore Fisheries by the last legislature, whereby it became his duty to exercise supervision over all the fisheries and its products taken from the tide waters within the State, including the proper enforcement of laws relating to the catching, packing, canning, manufacturing, branding, and transportation of all kinds of pickled, smoked, salt, fresh, canned, frozen, shell or other fish, has proved that the appropriation is not sufficient to do the work in such a manner as would seem to be required by the legislature, and by such methods as would accomplish the best results. The fisheries are invaluable to the State, as will be seen by the report that over four million dollars have been distributed among our citizens all along the coast; men who are dependent upon the products of the sea for a livelihood. The question is often asked,

what would become of the fishermen of Maine if the mighty and fruitful ocean should fail to give up its bounty? Nature has given us a reservoir of riches, and it becomes the duty of the State to act well its part in guarding and protecting its interests. Statistics become more valuable with age, for it is the comparison year by year that makes them interesting and instructive. The want of reliable and impartial information in reference to the fisheries has been the cause of much unwise legislation in the past.

SUMMARY OF THE MONEY VALUE OF THE FISHERIES PRODUCT FOR THE YEAR 1896.

Sardine fisheries.....	\$1,928,546 50
Lobster fisheries.....	790,276 70
Herring.....	251,165 00
Smelt fisheries.....	71,704 00
Sword fisheries.....	39,524 63
Alewives fisheries.....	16,204 50
Smoked herring fisheries.....	106,697 00
Clams fisheries.....	248,642 90
Salmon fisheries.....	12,288 52
Mackerel fisheries.....	84,566 83
Salt.....	202,530 00
Fresh fish fisheries.....	504,294 02
Shad fisheries.....	30,727 00
Scallop fisheries.....	5,000 00
Eels fisheries.....	772 00
Sturgeon fisheries.....	704 00
Bass fisheries.....	363 00
Fish oils.....	11,320 00
Scraps.....	20,000 00
Tom-cod.....	1,366 00
Total.....	\$4,326,692 60

The following are the names and address of the wardens in the Department of Sea and Shore Fisheries:

Bradford S. Woodward, York Corner, York county; J. F. Goldthwaite, Biddeford, York county; Adam W. Barbour, Portland, Cumberland county; Benjamin Gribben, Portland, Cumberland county; James Bailey, Bath, Sagadahoc county; Abner C. John-

son, Ashdale, Sagadahoc county; N. J. Hanna, New Harbor, Lincoln county; John E. Kelly, Boothbay, Lincoln county; Ruel T. York, Nobleboro, Lincoln county; W. L. Blackington, Rockland, Knox county; Benjamin Libby, Warren, Knox county; George W. Frisbee, Belfast, Waldo county; Samuel P. Cousins, East Lamoine, Hancock county; John N. Sprague, Swan's Island, Hancock county; John F. Gray, Sedgwick, Hancock county; F. M. Trundy, Oceanville, Hancock county; Charles Rich, Isle au Haut, Hancock county; E. V. Lyman, Prospect Harbor, Hancock county; John U. Hill, Sullivan, Hancock county; W. A. Henderson, Cutler, Washington county; William W. Blood, Milbridge, Washington county; Peter M. Kane, Eastport, Washington county.